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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/660,683

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EXAMINER

PATEL, JAYESH A

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/660,683	<b>Applicant(s)</b> EBISAWA, TAKASHI	
	<b>Examiner</b> Jayesh A. Patel	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Arguments***

Applicant's arguments filed On 10/10/2007 have been fully considered but they are not persuasive. Regarding Claim 1, the applicant argues on Pages 3 and 4 that Tanaka does not disclose **"the object pixel detecting means comprises a density judgment section which determines the relevant pixel to be a prospective object pixel when the density of the relevant pixel is higher than the first threshold value higher than the density of the background of the border of the original and not higher than the density of the thinnest line in the lines which forms said characters"** the examiner disagrees.

Tanaka in Figs 1, 4, 12 and 16 discloses the claimed limitations. Tanaka in Fig 4 discloses a comparators 14, 15 and 25 which outputs the respective edge detection signals based on the densities of the pixels **(edge pixels and its surrounding pixels)**. Tanaka further explains the density judgment **(small, intermediate and large sharp edges by the characteristics judging circuit 28 in Fig 1) at (Col 5 lines 17-63)**. Based on results of the comparator the density conversion is selected. Tanaka further discloses in Fig 12 discloses a certain pixel **(relevant pixel)** to be an object pixel **(thin line or not)** when the value (density) is greater than the first threshold T1 at **(Col 9 Lines 25-47)**. Tanaka further discloses that the characteristics judging circuit 12 **(Fig 12)** determines the density conversion selecting signal based on the thin line detection signal, the first edge detection signal, the second edge detection signal, the high density line detection signal and the distance classifying signal **(Fig 17)**. Tanaka further

discloses the detection of edges (changes in sharpness or densities) based on multiple thresholds as claimed at **(Col 10 Lines 1-30 where second threshold T2 is smaller than First threshold T1)**. Tanaka discloses that If the value of the pixel is higher than the first threshold value **(which is higher than the background of the border (pixels close to the edge but are not edge (sharpness decreases)) and is not higher than (smaller than) the edge or thin line or character (sharpness increases)))** for selection of the density conversion curves at **(Col 11 Lines 1-37)**.

The applicant further argues on page 4 Lines 19-20 "that the density judgment section recited in claim 1 is different from the edge detection circuit disclosed", the examiner disagrees. As per the above explanation Tanaka discloses the density judgment **(changes in the sharpness of the pixels)** is not merely edge detection but also a judgment section based on the detected edges **(comparing with multiple thresholds)**.

The applicant further argues on page 5 that the first threshold and second threshold values in Claim 1 are different from the Threshold T2 and threshold T3 of Tanaka. The examiner disagrees as the specific values are not claimed and the thresholds as disclosed by Tanaka meet the limitations of the Claim 1.

The applicant further argues on Page 5 Lines 6-9 that Tanaka does not disclose the enhancement processing in claim 1. The examiner disagrees as the specific image enhancement is not disclosed and the density conversion **(emphasis added)** as disclosed by Tanaka at **(Col 11 Lines 50 through Col 12**

**Lines 1-14)** is enhancing the image by converting the density using the respective curves.

Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al.

(US 5548415) hereafter Tanaka.

1. Regarding claim 1, Tanaka discloses an image processing system (**Figs 4, 12-16**) which comprises an object pixel detecting means which determines whether

relevant pixels (**certain pixel Fig 16**) in the character image information obtained by reading an original on which characters (**Col 2 Line 57**) have been recorded are object pixels (**edge pixels**) to be subjected to enhancement processing and carries out enhancement processing on pixels determined to be object pixels, thereby carrying out edge enhancement processing on the character image information, wherein the improvement comprises that the object pixel detecting means comprises a density judgment section (**Fig 3,4 and Col 2 Lines 36-67 and Col 5 Lines 17-27**) which determines the relevant pixel to be a prospective object pixel when the density of the relevant pixel is higher than a first threshold value (**T3 to detect intermediate sharp edges**) higher than the density of the background of the border (**pixels outside to edge of character forming background**) of the original and not higher (**Lower**) than the density of a thinnest line in lines which form said characters (**pixel close to edge of character**) and is not higher than a second threshold value (**T2 to detect sharp edges**) not lower than the density of a thinnest line (**sharp edge pixels**) in lines which form said characters at (**Col 5 Lines 17-54**), and a thin line image detecting section (**Fig 12 Element 5**) which determines the relevant pixel to be a thin line pixel forming a part of a thin line image (**Fig 12 Element 5**), and determines that the relevant pixel is an object pixel when the density judgment section determines the relevant pixel to be a prospective object pixel and the thin line image detecting section determines the relevant pixel to be a thin line pixel at (**Col 9 Lines 25-67 and Col 10 Lines 1-24**). The threshold values used by

Tanaka are used in distinguishing the density changes. The thresholds can be determined in accordance to the sharp edges and the pixels **(close from the edges belonging to the background)**, so the proper enhancement can be applied. Tanaka has first threshold **(T3 to detect intermediate sharp edges which are the pixels close to the boundary or edge of the character)** not higher **(lower)** than the second threshold **(T2 to detect the sharp edges of the character)** at **(Col 5 lines 36-54)**. Tanaka teaches that the threshold **(first or second)** to detect sharp edges has to be higher than the threshold **(first or second)** to detect the intermediate sharp edges or vice versa in Col 5.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US 5548415) hereafter Tanaka in view of Huang (US 6175659) hereafter Huang.

2. Regarding Claim 2, Tanaka discloses an image processing system as defined

in claim 1. Tanaka also discloses the density conversion circuit 3 in **(Figs 1,8 and 12)** which performs the enhancement **(selection of the appropriate density curve or values at Col 6 Lines 1-65)**, however does not and is silent in which relevant pixels which have not been determined to be an object pixel are subjected to a weak enhancement processing the degree of enhancement of which is weaker than that of the enhancement processing for said edge enhancement processing.

Huang discloses an **(adaptive edge enhancement device Fig 1)** in which relevant pixels which have not been determined to be an object pixel are subjected to a weak enhancement processing the degree of enhancement **(generated by the set of thresholds T1-T4)** of which is weaker than that of the enhancement processing for said edge enhancement processing at **(Col 4 Lines 16-46)**. Huang discloses that the device as disclosed in which the enhancement modes are dynamic provides a better image quality at **(Col 1 Lines 32-35)**. Both Tanaka and Huang are from the same field of endeavor and are analogous art, therefore it would have been obvious for one of ordinary skill in the art, at the time the invention was made to have used the teachings of adaptive edge enhancement as taught by Huang in the apparatus of Tanaka for the above reasons.

3. Regarding Claim 3, Tanaka discloses an image processing system as defined in claim 1 which further comprises a density difference calculating means **(Fig 15**



**distance calculating circuit and Col 11 Lines 23-37)** which calculates the difference in density between a non-object pixel (**not an edge, could be close to edge or gradation**) and the surrounding pixels (**one of the surrounding pixel could be an edge pixel**) adjacent to the non-object pixel and carries out a weak enhancement (**density conversion Fig 12 Element 3**) processing on the non-object pixel when the difference in density is larger (**greater**) than a predetermined third threshold value (**Col 5 Lines 56-57 and 61-63**) and does not carry out the weak enhancement (**density conversion**) processing when the difference in density is not larger than the third threshold value. Huang also discloses an adaptive edge enhancement apparatus depending on the threshold values used in detecting the density gradients in fig 1.

### ***Conclusion***

The references (US 6266439), (US 4862283) and (US 6750986) also teaches the claimed elements. (US 4862283) teach in (Fig 1-3) the pixel discrimination using two thresholds. (US 6750986) shows the (thin –line) and enhancement and (US 6266439) teaches enhancing text from the background using two thresholds.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service

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Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel  
11/26/07

JP

JINGGE WU  
SUPERVISORY PATENT EXAMINER

A large, stylized handwritten signature in black ink, likely belonging to Jingge Wu, is written over the printed name and title.